

Gunter, Jason

From: Nations, Mark [mnations@doerun.com]
Sent: Thursday, October 10, 2013 10:32 PM
To: Gunter, Jason
Cc: England, Jason; Yingling, Mark; Wohl, Matthew; robert.hinkson@dnr.mo.gov; Ty Morris (TMorris@barr.com); Sanders, Amy B.
Subject: Rivermines Progress Report
Attachments: RM 09-13.doc; 2013-09-25 RM NPDES Pace Lab Report.pdf; September Rivermines Pilot Test Samples.pdf

Jason,
Attached is Rivermines Progress Report.
Mark

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Superfund

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Remediation Group

Mark Nations
Mining Properties Manager
mnations@doerun.com

October 11, 2013

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
11201 Renner Blvd.
Lenexa, KS 66219

Re: The Doe Run Company – Elvins/Rivermines Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 56 of the Unilateral Administrative Order (UAO) (CERCLA-07-2005-0169) for the referenced project and on behalf of The Doe Run Company, the progress report for the period September 1, 2013 through September 30, 2013 is enclosed. If you have any questions or comments, please call me at 573-518-0800.

Sincerely,

Mark Nations
Mining Properties Manager

Enclosures

c: Jason England – TDRC
Mark Yingling – TDRC (electronic only)
Matt Wohl – TDRC (electronic only)
Robert Hinkson – MDNR
Ty Morris – Barr Engineering

Elvins/Rivermines Mine Tailings Site
Park Hills, Missouri
Removal Action - Monthly Progress Report
Period: September 1, 2013 – September 30, 2013

1. Actions Performed and Problems Encountered This Period:

- a. Between the dates of September 1, 2013 and September 30, 2013, flow through the pilot test was directed in two separate configurations. In the first flow configuration, water from the seepage pond passed through the roughing filter and discharged through the bypass pipe. In the second configuration, flow from the seepage pond passed through the iron filter and discharged into the round tank, after which it discharged from the round tank directly into the effluent channel.
- b. Excess clogging occurred in the roughing filter this period. This caused overtopping of the pool though the entire period. In addition, head losses in the pool were large enough in magnitude that syphoning of the roughing filter effluent was not possible, and samples were not obtained of the roughing filter effluent.
- c. Continued to take analytical samples from the pilot test one to three times a week. Samples were taken from the seepage pond (system influent), and the ZVI filter effluent (RMP-Polish). Samples of the roughing filter (RMP-Rough) were not taken due to conditions of the pilot test.
- d. Continued to take analytical samples from the seep pond effluent and the western treatment pond effluent to monitor the metals reduction of the treatment pond.
- e. Flow through the seepage ponds was measured at approximately 240 gallons per minute on September 12, 2013. This is significantly less than the flow rates measured in the previous period, but still more than the 100 to 200 gallons per minute that have been observed in the system.
- f. Flow to the east treatment cell was turned off in the previous period and remained off throughout this period.

2. Analytical Data and Results Received This Period:

- a. Dissolved zinc concentrations from the polishing filter effluent ranged between 25.80 mg/L and 30.78 mg/L.
- b. Total zinc concentrations from the polishing filter effluent ranged between 26.18 mg/L and 30.92 mg/L.
- c. Total iron concentrations from the polishing filter effluent ranged between 0.06 mg/L and 0.11 mg/L.
- d. Total suspended solids concentrations in the polishing filter effluent ranged between non-detect and 7.0 mg/L during the period.
- e. During this period, water samples were collected from just upstream of Old Missouri Highway 32, as well as from upstream and downstream of the confluence of the site discharge with Flat River. The analytical results for this event are included with this progress report.
- f. During this period, the Ambient Air Monitoring Reports for June 2013 and Second Quarter 2013 were completed. Any issues identified in these reports are discussed below. A copy of these documents has been sent to your attention.

The June 2013 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP monitors on 06/06/13 due to training.
- The sample for Rivermines #2 (Wood & Barton) TSP monitor on 06/21/13 was invalid due to an electrical failure. Upon discovering the electrical failure, the issue was addressed.

- The sample for Rivermines #2 (Wood & Barton) PM₁₀ monitor on 06/21/13 was invalid due to a mechanical failure. Upon discovering the mechanical failure, the issue was addressed.

The Second Quarter 2013 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP monitors on 05/27/13 due to the holiday.
- No samples were taken with the PM₁₀ monitors on 05/28/13 due to the holiday.
- No samples were taken with the TSP monitors on 06/06/13 due to training.
- The sample for Rivermines #2 (Wood & Barton) TSP monitor on 06/21/13 was invalid due to an electrical failure. Upon discovering the electrical failure, the issue was addressed.
- The sample for Rivermines #2 (Wood & Barton) PM₁₀ monitor on 06/21/13 was invalid due to a mechanical failure. Upon discovering the mechanical failure, the issue was addressed.

3. Developments Anticipated and Work Scheduled for Next Period:

- a. Continue analytical sampling and field measurements three times a week. No WET tests are planned.
- b. Continue to operate the renovated pilot test.
- c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- d. Complete air monitoring activities as described in the Removal Action Work Plan.
- e. Continue monitoring the western treatment pond to see that the hydraulics are working properly and evaluate the metals reduction as the pond continues to come online.
- f. Further investigate issues that pertain to the leaking of water from the seepage pond manhole. If required, remove any debris located in the pipe between the manhole and the west treatment cell. It is anticipated that a pipe cleaning contractor will be needed to investigate and remove the obstruction in the west pond piping.
- g. Pending successful operation of the west pond, cleanout of the old media in the east pond may begin later this year.
- h. Begin preliminary work on long-term surface water management plan including treatment and disposal/discharge options for the seepage from the tailings pile that is currently treated in the biocells.

4. Changes in Personnel:

- a. Jason England has temporarily been reassigned to another position within Doe Run. While he is on this assignment, he will not be very involved with the work at this site. Genevieve Bodnar, an environmental engineer in Doe Run's mining division, will be providing support to the remediation crew on an as needed basis during Jason's absence. Mark Nations will continue in his existing role and will be the primary contact for the work at this site.

5. Issues or Problems Arising This Period:

- a. None.

6. Resolution of Issues or Problems Arising This Period:

- a. None.



Pace Analytical Services, Inc.
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October 04, 2013

Amy Sanders
The Doe Run Company
P. O. Box 500
Viburnum, MO 65566

RE: Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Dear Amy Sanders:

Enclosed are the analytical results for sample(s) received by the laboratory on September 26, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church

jamie.church@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-13-4
Utah Certification #: KS000212013-3
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60154032001	10438/RIVERMINES DOWNSTREA	Water	09/25/13 11:06	09/26/13 08:10
60154032002	10439/RIVERMINES UPSTREAM	Water	09/25/13 10:42	09/26/13 08:10
60154032003	10440/RIVERMINES 001	Water	09/25/13 10:52	09/26/13 08:10

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SAMPLE ANALYTE COUNT

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60154032001	10438/RIVERMINES DOWNSTREA	EPA 200.7	NDJ	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60154032002	10439/RIVERMINES UPSTREAM	EPA 200.7	NDJ	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		EPA 200.8	SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60154032003	10440/RIVERMINES 001	EPA 200.8	SMW	3	PASI-K
		SM 2540D	RAH	1	PASI-K
		SM 2540F	JML	1	PASI-K
		EPA 300.0	OL	1	PASI-K

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ANALYTICAL RESULTS

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Sample: 10438/RIVERMINES DOWNSTREA Lab ID: 60154032001 Collected: 09/25/13 11:06 Received: 09/26/13 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	267000	ug/L	100	10.4	1	09/29/13 13:42	09/30/13 16:48	7440-70-2	
Magnesium	78200	ug/L	50.0	6.5	1	09/29/13 13:42	09/30/13 16:48	7439-95-4	
Total Hardness by 2340B	988000	ug/L	500		1	09/29/13 13:42	09/30/13 16:48		
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	2.9	ug/L	0.50	0.050	1	09/29/13 13:42	10/01/13 14:22	7440-43-9	
Lead	10.8	ug/L	1.0	0.030	1	09/29/13 13:42	10/01/13 14:22	7439-92-1	
Zinc	5030	ug/L	10.0	1.0	1	09/29/13 13:42	10/01/13 14:22	7440-66-6	
200.8 ICPMS, Dissolved (LF) Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	1.9	ug/L	0.50	0.050	1	09/30/13 17:10	10/01/13 16:15	7440-43-9	
Lead, Dissolved	5.2	ug/L	1.0	0.030	1	09/30/13 17:10	10/01/13 16:15	7439-92-1	
Zinc, Dissolved	4220	ug/L	10.0	1.0	1	09/30/13 17:10	10/01/13 16:15	7440-66-6	
2540D Total Suspended Solids Analytical Method: SM 2540D									
Total Suspended Solids	9.0	mg/L	5.0	5.0	1		09/30/13 11:20		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	733	mg/L	100	16.0	100		10/03/13 13:07	14808-79-8	

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ANALYTICAL RESULTS

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Sample: 10439/RIVERMINES UPSTREAM Lab ID: 60154032002 Collected: 09/25/13 10:42 Received: 09/26/13 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Calcium	65900	ug/L	100	10.4	1	09/29/13 13:42	09/30/13 16:51	7440-70-2	
Magnesium	37900	ug/L	50.0	6.5	1	09/29/13 13:42	09/30/13 16:51	7439-95-4	
Total Hardness by 2340B	321000	ug/L	500		1	09/29/13 13:42	09/30/13 16:51		
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	0.19J	ug/L	0.50	0.050	1	09/29/13 13:42	10/01/13 14:26	7440-43-9	B
Lead	3.9	ug/L	1.0	0.030	1	09/29/13 13:42	10/01/13 14:26	7439-92-1	
Zinc	4.5J	ug/L	10.0	1.0	1	09/29/13 13:42	10/01/13 14:26	7440-66-6	
200.8 ICPMS, Dissolved (LF) Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium, Dissolved	0.16J	ug/L	0.50	0.050	1	09/30/13 17:10	10/01/13 16:19	7440-43-9	B
Lead, Dissolved	0.087J	ug/L	1.0	0.030	1	09/30/13 17:10	10/01/13 16:19	7439-92-1	
Zinc, Dissolved	3.8J	ug/L	10.0	1.0	1	09/30/13 17:10	10/01/13 16:19	7440-66-6	B
2540D Total Suspended Solids Analytical Method: SM 2540D									
Total Suspended Solids	7.0	mg/L	5.0	5.0	1		09/30/13 11:21		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	112	mg/L	20.0	3.2	20		10/02/13 22:22	14808-79-8	

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ANALYTICAL RESULTS

Project: NPDES (RIVER MINES)

Pace Project No.: 60154032

Sample: 10440/RIVERMINES 001 Lab ID: 60154032003 Collected: 09/25/13 10:52 Received: 09/26/13 08:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Cadmium	2.0	ug/L	0.50	0.050	1	09/29/13 13:42	10/01/13 14:34	7440-43-9	
Lead	3.0	ug/L	1.0	0.030	1	09/29/13 13:42	10/01/13 14:34	7439-92-1	
Zinc	17500	ug/L	10.0	1.0	1	09/29/13 13:42	10/01/13 14:34	7440-66-6	
2540D Total Suspended Solids Analytical Method: SM 2540D									
Total Suspended Solids	11.0	mg/L	5.0	5.0	1		09/30/13 11:22		
2540F Total Settleable Solids Analytical Method: SM 2540F									
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		09/26/13 16:30		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0									
Sulfate	709	mg/L	100	16.0	100		10/03/13 13:22	14808-79-8	

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QUALITY CONTROL DATA

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

QC Batch: MPRP/24477 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60154032001, 60154032002

METHOD BLANK: 1262582 Matrix: Water
Associated Lab Samples: 60154032001, 60154032002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	ND	100	09/30/13 16:28	
Magnesium	ug/L	ND	50.0	09/30/13 16:28	
Total Hardness by 2340B	ug/L	ND	500	09/30/13 16:28	

LABORATORY CONTROL SAMPLE: 1262583

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Total Hardness by 2340B	ug/L		67000			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1262584 1262585

Parameter	Units	60153833002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Calcium	ug/L		10000	10000	46700	48000	103	115	70-130	3	9
Magnesium	ug/L		10000	10000	188000	190000	114	132	70-130	1	9 M1
Total Hardness by 2340B	ug/L	820 mg/L			892000	903000				1	

MATRIX SPIKE SAMPLE: 1262586

Parameter	Units	60153833003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L		10000	154000	88	70-130	
Magnesium	ug/L		10000	71800	96	70-130	
Total Hardness by 2340B	ug/L	618 mg/L		680000			

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QUALITY CONTROL DATA

Project: NPDES (RIVER MINES)

Pace Project No.: 60154032

QC Batch: MPRP/24472 Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60154032001, 60154032002, 60154032003

METHOD BLANK: 1262561

Matrix: Water

Associated Lab Samples: 60154032001, 60154032002, 60154032003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	0.14J	0.50	10/01/13 14:18	
Lead	ug/L	0.051J	1.0	10/01/13 14:18	
Zinc	ug/L	ND	10.0	10/01/13 14:18	

LABORATORY CONTROL SAMPLE: 1262562

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	40	40.6	101	85-115	
Lead	ug/L	40	39.9	100	85-115	
Zinc	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1262563 1262564

Parameter	Units	60153765002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Cadmium	ug/L	ND	40	40	41.0	41.3	102	103	70-130	1	20
Lead	ug/L	ND	40	40	42.8	43.1	105	106	70-130	1	20
Zinc	ug/L	41.6	100	100	142	143	100	102	70-130	1	20

MATRIX SPIKE SAMPLE: 1262565

Parameter	Units	60154032002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	0.19J	40	41.3	103	70-130	
Lead	ug/L	3.9	40	45.7	105	70-130	
Zinc	ug/L	4.5J	100	105	101	70-130	

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QUALITY CONTROL DATA

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

QC Batch: MPRP/24495 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60154032001, 60154032002

METHOD BLANK: 1263020 Matrix: Water
Associated Lab Samples: 60154032001, 60154032002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	0.14J	0.50	10/01/13 16:06	
Lead, Dissolved	ug/L	ND	1.0	10/01/13 16:06	
Zinc, Dissolved	ug/L	1.5J	10.0	10/01/13 16:06	

LABORATORY CONTROL SAMPLE: 1263021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	40	41.2	103	85-115	
Lead, Dissolved	ug/L	40	40.0	100	85-115	
Zinc, Dissolved	ug/L	100	113	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1263022 1263023

Parameter	Units	60153808001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	ND	40	40	39.0	38.6	97	96	70-130	1	20	
Lead, Dissolved	ug/L	ND	40	40	42.4	42.0	106	105	70-130	1	20	
Zinc, Dissolved	ug/L	53.5	100	100	147	148	93	94	70-130	1	20	

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QUALITY CONTROL DATA

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

QC Batch: WET/43698 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 60154032001, 60154032002, 60154032003

METHOD BLANK: 1262696 Matrix: Water

Associated Lab Samples: 60154032001, 60154032002, 60154032003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	5.0	09/30/13 11:16	

SAMPLE DUPLICATE: 1262697

Parameter	Units	60153912004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	392	272	36	25	D6

SAMPLE DUPLICATE: 1262698

Parameter	Units	60154032001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	9.0	8.0	12	25	

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QUALITY CONTROL DATA

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

QC Batch: WETA/26453 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60154032002

METHOD BLANK: 1264161 Matrix: Water
Associated Lab Samples: 60154032002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	10/02/13 21:05	

LABORATORY CONTROL SAMPLE: 1264162

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1264165 1264863

Parameter	Units	60154032002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Sulfate	mg/L	112	100	100	207	207	96	95	80-120	0 15	

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QUALITY CONTROL DATA

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

QC Batch: WETA/26466 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60154032001, 60154032003

METHOD BLANK: 1264889 Matrix: Water
Associated Lab Samples: 60154032001, 60154032003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	10/03/13 09:00	

LABORATORY CONTROL SAMPLE: 1264890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1264891 1264892

Parameter	Units	60153733002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Sulfate	mg/L	21.0	25	25	46.9	49.3	103	113	80-120	5 15	

MATRIX SPIKE SAMPLE: 1264893

Parameter	Units	60153733003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	270	250	558	115	80-120	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NPDES (RIVER MINES)
Pace Project No.: 60154032

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60154032001	10438/RIVERMINES DOWNSTREA	EPA 200.7	MPRP/24477	EPA 200.7	ICP/19061
60154032002	10439/RIVERMINES UPSTREAM	EPA 200.7	MPRP/24477	EPA 200.7	ICP/19061
60154032001	10438/RIVERMINES DOWNSTREA	EPA 200.8	MPRP/24472	EPA 200.8	ICPM/2535
60154032002	10439/RIVERMINES UPSTREAM	EPA 200.8	MPRP/24472	EPA 200.8	ICPM/2535
60154032003	10440/RIVERMINES 001	EPA 200.8	MPRP/24472	EPA 200.8	ICPM/2535
60154032001	10438/RIVERMINES DOWNSTREA	EPA 200.8	MPRP/24495	EPA 200.8	ICPM/2537
60154032002	10439/RIVERMINES UPSTREAM	EPA 200.8	MPRP/24495	EPA 200.8	ICPM/2537
60154032001	10438/RIVERMINES DOWNSTREA	SM 2540D	WET/43698		
60154032002	10439/RIVERMINES UPSTREAM	SM 2540D	WET/43698		
60154032003	10440/RIVERMINES 001	SM 2540D	WET/43698		
60154032003	10440/RIVERMINES 001	SM 2540F	WET/43649		
60154032001	10438/RIVERMINES DOWNSTREA	EPA 300.0	WETA/26466		
60154032002	10439/RIVERMINES UPSTREAM	EPA 300.0	WETA/26453		
60154032003	10440/RIVERMINES 001	EPA 300.0	WETA/26466		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60154032



Client Name: Doc Run

Courier: Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 7967 6702 8394

Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ ice

Thermometer Used: T-112 / T-194

Type of Ice: (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.5

Date and initials of person examining contents: 9/26/13-BA

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>Self sol</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses	Matrix: <u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:

Client Notification/ Resolution:

Copy COC to Client? Y / N

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 9/26/13

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A

Required Client Information:

Company: The Doe Run Company
Address: PO Box 500
Email To: asanders@doerun.com
Phone: (573) 689-4535 Fax: (573) 244-8179
Requested Due Date/TAT: 5 To 7 Days

Section B

Required Project Information:

Report To: Amy Sanders
Copy To:
Purchase Order No.:
Project Name: NPDES (Rivermines)
Project Number:

Section C

Invoice Information:

Attention: Amy Sanders
Company Name: The Doe Run Company
Address: PO Box 500, Viburnum, MO 65588
Pace Quote Reference
Pace Project Manager
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER
☐ UST ☐ RCRA

Site Location

STATE: MO

Page: 1 of 1

COC#: 137

60154032

Requested Analysis Filtered (Y/N)

Section C Required Sample Information		Valid Matrix Codes		CODE	COLLECTED DATE/TIME				SAMPLE TEMP AT COLLECTION	Bottles / Preservatives										*See Additional Comments Below Analysis Test	SEND Lab Project No./ Lab ID.											
ITEM #	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	MATRIX WATER WASTE WATER SOL/SOLID	CODE WT WW SL		MATRIX TYPE (G-GRAB C-COMP)	COMPOSITE START		COMPOSITE END / GRAB		Total # OF CONTAINERS	250 mL Unpreserved	500 mL Unpreserved	1 L Unpreserved	250 mL Nitric	250 mL Amber Glass H ₂ SO ₄	250 mL Plastic H ₂ SO ₄	1000 mL Amber HCL	250 mL ZnAc/NaOH	500 mL Amber Glass H ₂ SO ₄			N N N N N N N N N N N N N N N N N N N N										
						DATE (mm/dd/yy)	TIME (Military)	DATE (mm/dd/yy)														TIME (Military)										
1	10438	18734 18734	WT	G			09/25/13	1046	442	1	1	1	1							CD-D, PB-D, ZN-D, HARD, SO4, CD-T, PB-T, TSS-T, ZN-T	Rivermines Downstream											
2																																
3	10439		WT	G			09/25/13	1042	69	2	1	1	1							CD-D, PB-D, ZN-D, HARD, SO4, CD-T, PB-T, TSS-T, ZN-T	Rivermines Upstream											
4																																
5	10440		WW	G			09/25/13	1052	483	1	1	1	1							SO4, SS, TSS, CD-T, PB-T, ZN-T	Rivermines 001											
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ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Amber Nipper	9/25/13	1250	Amber Nipper	9/25/13	0810	3.5 y y y

SAMPLER NAME AND SIGNATURE		DATE		TIME		TEMP IN °C		pH IN DU		RECEIVED ON		CUSTODY	
PRINT Name of SAMPLER:		DATE		TIME		TEMP IN °C		pH IN DU		RECEIVED ON		CUSTODY	
SIGNATURE of SAMPLER:		DATE		TIME		TEMP IN °C		pH IN DU		RECEIVED ON		CUSTODY	
Amber Nipper		9/25/13											